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Dear Sir:

The first nuclear reactor in California recently went into operation at North American Aviation's Downey plant. North American plans to use the reactor for production of neutrons for broad research projects related to both defense and peace-time applications. Of the "water boiler" type, the reactor is built up around 1.5-lbs. of uranium fuel in the form of uranium-235 enriched uranyl nitrate in water solution.

Progress is being made in preparation for the testing by an English team of scientists and technicians in Australia, of the nuclear explosives which have been produced in the United Kingdom. The test will be made in the region of the barren Monte Bello Islands, which lie off the northwest coast of Australia. Now, an area which is rectangular in shape, with an inverted triangle stretching out at the south toward the mainland, has been declared dangerous to ships. It roughly marks the test area and where radiation levels are expected to be abnormally high.

Twenty building construction unions at the uraniums-235 production plant now being built near Paducah, Ky., have signed a "declaration of policy" designed to curb strikes, the Atomic Energy Labor Relations Panel has announced. The unions agreed that when unauthorized stoppages occur, they shall use all available means to get their members to return to work, and that those disobeying shall be punished. F. H. McGraw & Co., general contractor on the project, also was a party to the declaration. The agreement was the achievement of John T. Dunlop, member of the Labor Panel, who is professor of economics, Harvard University.

Now being built at the Delft school of technology, Holland, a 600 Mev proton synchrotron will be the most powerful accelerator of its kind in Europe. It will be similar to the Phillips cyclotron in Amsterdam, but with a much greater particle accelerating power than the Phillips machine possesses.

A course in advanced radioisotope techniques in biochemical research is to be given by the special training division of the Oak Ridge Institute of Nuclear Studies, at Oak Ridge, Nov. 2-14, this year. First week of the course will be devoted to techniques centering around the use of Carbon-14, while the second week will be concerned with the other major isotopes used in biochemical research. Applications must be made by October 1st.....The 30th, 31st, and 32nd basic courses in radio-isotope techniques in research will be offered by the Institute on January 5th, February 2nd, and March 2nd, 1953. Information on these courses may be obtained from the Institute at P.O.Box 117, Oak Ridge, Tenn.

Additional South African gold mines have now been added to the original group engaged in the extraction of uranium from gold ores, the Minister of Mines of South Africa. This group includes: Blyvooruitzicht, between Randfontein and Potchefstroom; Western Reefs, near Klerksdorp; Daggafontein, near Springs; West Rand Consolidated, near Krugersdorp, West Driefontein, Blyvooruitzicht's neighbor, and Stilfontein, a developing mine near Klerksdorp.

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PRODUCTS, PROCESSES & INSTRUMENTS...in the nuclear field...

New boron trifluoride neutron counter, which the manufacturer believes to be the most efficient instrument of its type commercially produced. Representing a large period of company research, this two atmosphere enriched counter is of all aluminum construction (except for the anode, Kovar seal, and connector), which insures minimum neutron capture in the counter shell. The end sections of this counter are "heli-arc" aluminum-welded, and the whole counter is helium leak-tested before filling the company states. It is baked at 100-deg. C., for 12-hours, while being evacuated. A guard ring type construction is utilized. These counters are available in pressures of 150 and 12 cm. Hg., and in three standard sizes: 1"x 6"; 1"x 12"; and 1"x 20" active length.--Radiation Counter Laboratories, Skokie, Ill.

New gamma survey meter, called "Radector", utilizes Neher-White ionization chamber. Civil defense model, of the "Radector" measures from 0.02 to 500 R/hr. on a single logarithmic scale. This instrument is 5x3x3 in., and weighs 2-lbs. Its battery life is said to approximate shelf life. The firm states that the instrument's accuracy is within plus-or-minus 10% of radiation intensity, as indicated by dial readings.--Jordan Electronic Mfg. Co., Inc., 9042 Culver Blvd., Culver City, Calif.

NOTES- A new gamma survey instrument recently developed at the National Bureau of Standards, Washington, D.C., requires no microammeter, because radiation levels are read directly from a potentiometer dial. In operation, the operator turns the dial to the point at which an audio oscillation begins, as determined aurally by earphone. The device uses (1) a detector tube of the halogen-filled GM type, (2) a vibrator high-voltage power supply operated from flashlight-type batteries, and (3) a thyratron relaxation-oscillator circuit. If the potential difference between the grid and the cathode of the thyratron exceeds the firing potential, the circuit oscillates, enabling aural detection.

Special needs for crucibles of pure uranium dioxide by Argonne National Laboratory have resulted in that nuclear research establishment's fabrication of such crucibles. Argonne states that while both pressing and slip casting techniques can be used for forming refractories of uranium dioxide, pressing offers the advantage of simple preparation of raw material and freedom from contamination; however, wall thickness and design are limited. Slip casting can provide thin walls, and some design features not possible with pressed ware. For preparing slips of uranium dioxide, the acid leaching technique employed for slip casting of other non-plastic materials was used by Argonne for preparing slips of uranium dioxide. After preparation, the uranium refractories were allowed to dry for several days, at room temperature, and then fired in a molybdenum resistance furnace to a maximum temperature of 1750-deg. C., in a hydrogen atmosphere. After proper furnace cooling to ensure thermal equilibrium, the crucibles are stored in a dessicator.

NEW BOOKS & OTHER PUBLICATIONS...on nuclear energy & allied subjects...

Atomic Power, by Walter Isard and V. H. Whitney. A consideration of the subject from various standpoints. 235 pages. -- Blakiston Company, Philadelphia 5, Pa. ($4.75).

Isotopes in Biochemistry. C. E. Wolstenholme and others, editors. The proceedings of the symposium on this subject, held under the auspices of the Ciba Foundation, London, England. 288 pages. --Blakiston Company, Philadelphia 5, Pa. ($5.00).

Growth in Peacetime Uses of Atomic Energy, by P. C. Aebersold. Reprinted from manual of lectures presented at the inservice training course in radiological health by permission of University of Michigan's School of Public Health. --U.S. Atomic Energy Commission, Washington 25, D.C. (n/c).

Windowless Structures; A Study in Blast-Resistant Design. Intended for architects and engineers, methods are said to be disclosed to enable structures to survive intense blasts of very short duration, as from an atomic bomb. Said by Federal civil defense officials to represent 3-years of work on this subject.--Superintendent of Documents, Washington 25, D.C. ($1.00).

RAW MATERIALS...radioactive mineral workings & new discoveries...

CANADA-An important new pitchblende discovery in a brand new area is now reported by Radiore Uranium Mines. This firm has acquired 14-claims, totalling some 700-acres on Stark Lake, which connects with the main east arm of Great Slave Lake, some 125 miles east of Yellowknife, Northwest Territories, and it is here that the discovery is reported by Radiore officials. They advise that a trench blasted across the discovery zone shows much pitchblene both in the bottom of the trench and in the loose muck, and that a channel sample across the first 48-ins. assayed 4.95% uranium oxide, with the next 63-ins. assaying 0.82% or a total across the 9.2-ft. zone width of 3.36%. This is equivalent to $477.20 per ton. The company's engineers describe the zone as being heavily stained, showing botryoidal pitchblende and patches of massive niccolite, in addition to cobaltite and chalcopyrite. (This mineral association and the appearance of the structure is not unlike that of Eldorado's famous mine at Great Bear Lake.) Six of the claims on which the discovery was made are held under option from Basile Bay Base Metal and Uranium Company.

In the same area as Radiore"s new discovery (as above), what has the appearance of an interesting uranium prospect has been acquired by American Yellowknife Mines. The property, which includes some 12-claims, and is on a deep water navigation route, is on the south shore of Christie Bay, Great Slave Lake, about 100-miles east of Yellowknife, Northwest Territories. Samples from the claim ground (which is held under option to purchase from two prospectors), reportedly assayed 1.54% which is equivalent to a gross value of $233.30 per ton. The company has described the occurrences as narrow seams and films of pitchblende in zones of fracturing in the granodiorite.

AUSTRALIA-According to Australian Government geologists, the latest uranium finds at Edith river, Northwest Territory, in this country, appear to be capable of "substantial development". They have reported that although ore samples are in the main good, the geological formation is such that the present problem is to ascertain the extent of the field. Surface indications show that the Edith river deposit may extend far underground. They have also stated that if early impressions are confirmed, a local plant to concentrate ore before smelting may be installed.

BUSINESS BRIEFS...in the nuclear field...

New Plant to be Erected- Beckman Instruments, Inc., manufacturer of apparatus including nuclear instruments, expects to break ground in October for a new plant near La Habra and Fullerton, Calif., according to Dr. A. O. Beckman, president. Initial plans call for construction of a 150,000-sq.-ft. plant to be completed the first of March, and to cost more than $1,500,000. Later, Beckman intends to expand the plant to 240,000 sq-ft. Employment may rise to 6,000 eventually, from the present 1,450, Dr. Beckman stated. The firm presently is operating in about 15 locations in Pasadena, Calif., and hopes to consolidate all operations under one roof, giving up leased space and selling the firm's own three plants, according to the company's plans.

New Electrical Capacity for Nuclear Plants- Contracts for equipment and materials totalling $54,989,717 for seven of its steam plants have been awarded to 20 firms, the Tennessee Valley Authority revealed last week. A large portion of the electrical energy which the plants will furnish is to be for the USAEC's power needs, particularly for the Paducah, Ky., and the Portsmouth, Ohio uranium-235 producing units. The plants for which the equipment and materials have been ordered are the Widow's Creek and Colbert plants in Alabama; the Shawnee, in Kentucky; and the Johnsonville, Kingston, John Sevier, and Gallatin plants in Tennessee. Seven of the contracts were awarded Westinghouse Electric, and totalled $17,802,800, for turbogenerators, steam condensing units, oil circuit breakers, switchboards, and transformers, General Electric was the next largest recipient, receiving three contracts for turbogenerators, transformers, and reactors.

New Contractors to be Selected for USAEC's Portsmouth Plant-Because the USAEC desires additional industrial firms in the United States to acquire the ability to operate gaseous diffusion uranium-235 producer plants, it will not give Union Carbide the operation of its new $1.2 billion uranium-235 unit to be constructed at Portsmouth, Ohio. However, Union Carbide will advise the USAEC on process design and equipment, and will have its engineers cooperate with those of the new contractor.

RADIOISOTOPES...new industrial & medical applications...

Catalyst Flow Rate Checked- A new application of radioactive tracer techniques was developed recently at Salt Lake Refining Co.'s Houdriflow catalytic cracking unit at Salt Lake City, Utah. The object was to determine the flow rate of solid particles inside the cracking vessels. To solve this problem, engineers of California Research Corp. conceived the idea of introducing a few pellets of catalyst impregnated with a radioactive substance. The travel of the individual radioactive particles was then traced by means of Geiger counters located at appropriate points along the catalytic equipment. The intensity of radiation from the particles was selected at such a value that the path and average velocity of individual radioactive particles could be plotted. The survey proved that catalyst circulated through all parts of the Houdriflow unit with excellent uniformity.

Absorption Rate Determined-The absorption rates of suppositories have been compared by use of sodium iodide labeled with iodine-131, according to a paper by C. F. Peterson, Purdue University, delivered at the American Pharmaceutical Association's meeting last month in Philadelphia. The iodine was incorporated into the suppositories, which were then administered to rats. The absorption rates were calculated from the amount of iodide in the blood and thyroid when the rat was killed. It was found that the iodide was most readily absorbed from the glycerogelatin base, followed in decreasing order of absorption by propylene glycol monostearate, Carbowax 4000, Tween 61, and cocoa butter bases.

AT VARIOUS SCIENTIFIC MEETINGS...nuclear subjects to be discussed...

American Chemical Society's 122nd National Meeting, Atlantic City, N.J., September 14-19. Effects of Gamma-Radiation on Vitamins and Enzyme Activity will be discussed by Hung-Chung Kung, E. L. Gaden, Jr., and C. G. King, in the division of agricultural and food chemistry. Radiochemical Studies on the Photofission of Thorium, by Dale M. Hiller and Don S. Martin will be discussed in the division of physical and inorganic chemistry. Natural Radon as a Radiotracer in Sewage Outfall Studies, by T. G. Bullen and Wm. F. O'Connor, who will also cover Radium as a Tracer in Sewage Flow Measurements, will be in the division of water, sewage, and sanitation chemistry. Another paper in this division, by Cecil G. Dunn, will cover The Treatment of Water and Sewage by Ionizing Radiations.

Instrument Society of America's 7th National Instrument Conference, Cleveland, Ohio, September 8-12. A session on radiation instrumentation, with Richard W. Johnston, USAEC, Washington, as chairman, will hear Reflection Microscope Dosimeters by F. R. Shonka, Argonne National Laboratory; Roentgen Calibrations, by H. O. Wyckoff, National Bureau of Standards, Washington; Radioactivity Measurements at National Bureau of Standards, by W. B. Mann, of the Bureau; Applications of Visibly Transparent Non-Metallic Electrically Condusting Films, by Leland B. Clarke, Sr., Naval Research Laboratory, Washington; and Voltage Regulators and Reference Tubes, by D. L. Collins and R. L. Spaulding, Victoreen Instrument Co., Cleveland. At a session on electrical instruments, D. L. Collins, Victoreen Instrument Co., will discuss Electrometer Tubes and Their Applications to Basic Instrumentation; and F. M. Alexander, Industrial Nucleonics Corp., Columbus, Ohio, will discuss Applications of Beta Radiation Gages to Industrial Process Control (Nuclear instrument and allied product manufacturers who will exhibit at this ISA Conference include Beckman Instruments, Inc., and their recently acquired subsidiary, Berkeley Scientific; Canadian Radium & Uranium Corp., New York; Industrial Nucleonics Corp., Columbus 12, Ohio; Ohmart Corp., Cincinnati 38, Ohio and Victoreen Instrument Co., Cleveland, Ohio.)

National Chemical Exposition, Chicago, Ill., September 9-13. A symposium on Industrial Applications of Atomic Energy will cover such subjects as Tracer Experimentation; Utilization of Fission Products; Business Management in the Atomic Age; and others. Main speaker at this symposium will be Eugene M. Zuckert, USAEC Commissioner. Additionally, there will be some seven displays of nuclear energy equipment; an exhibit of natural and pile-produced isotopes; a display on radiography of metals; and four films about radioisotopes and nuclear topics.

ATOMIC PATENT DIGEST...latest U.S. grants...

Radiation counter. In part, comprising two concentric electrodes, and an ionizing medium between them, one of these electrodes constructed of a material which emits relatively few electrons upon positive ion bombardment, the medium comprising a mixture of a vehicular permanent gas and a second permanent gas. A detector is responsive to surrent surges between the electrodes induced by the passage of ionizing particles through the ionizing medium. U. S. Pat. No. 2,606,296 issued Aug. 5, 1952; assigned to United States of America (USAEC).

Adustable Venturi assembly. An adjustable venturi assembly adapted for use in a flow control apparatus employing a preadjusted universal flow indicator connected to it. U. S. Pat. No. 2,606,573 issued August 12th, 1952; assigned to United States of America (USAEC).

Dry cell assembly. A voltaic cell comprising an inert anode, a zinc cathode, a layer of a depolarizing paste consisting essentially of manganese dioxide and a saturated ammonium chloride solution ambient to this anode, a layer of resin paste in contact with this cathode, and these layers being separated by and making electrical contact through an ion permeable separating member. U. S. Pat. No. 2,607,809 issued August 19th, 1952; assigned to United States of America (USAEC).

Electrodeposition of metal salts. The process of quantitatively electrodepositing uranium fluoride from a dilute acqueous solution of uranyl nitrate. Comprises contacting at least two electrodes with a dilute acqueous solution of uranyl nitrate wherein concentration of sodium fluoride lies in the range of between about 25 times to about 300 times the concentration of the uranyl nitrate. By passing a direct current through this solution at about 7-volts, and with a current density at the cathode of about 0.6-ampere per square decimeter, insoluble lower valent uranium fluoride is deposited. U. S. Pat. No. 2,608,530 issued August 26th, 1952; assigned to United States of America (USAEC).

Fluorination process. A method for the perfluorination of a hydrocarbon. to replace with fluorine, all hydrogen atoms attached to carbon therein, while retaining the carbon structure of the starting compound. Includes the steps of (1) vaporizing a hydrocarbon. (2) maintaining solid cerium tetrafluoride in a reaction zone at a temperature between about 100-degrees and about 450-degrees centigrade and above the boiling point of the starting hydrocarbon, (3) causing the vapor of the hydrocarbon to react with the cerium tetrafluoride in the reaction zone, with replacement, with fluorine, of all hydrogen atoms attached to carbon in the starting hydrocarbon, and (4) separating from the reaction product a perfluoro organic compound having the carbon structure of the starting hydrocarbon. U. S. Pat. No. 2,608,593 issued August 26th, 1952; assigned to United States of America (USAEC).

Method for measuring radiation. In part, neutron density indicating means comprising a pair of blocking layer type photocells connected in series opposition relationship, means which becomes luminescent when subjected to neutron irradiation positioned to activate one only of these photocells, and electrical indicating means connected to these series connected photocells. U. S. Pat. No. 2,608,661 issued August 26th, 1952; assigned to United States of America (USAEC).

Apparatus for determining vessel leakage. Comprises, in part, a gas-tight hood surrounding the vessel under test, an inlet in the hood for admitting gas therein, a vacuum line connected to the vessel, a calibrated reference leak connected to the vacuum line within the hood, a valve in the line between the reference leak and the outlet, and an analyzer in the vacuum line outside the hood for measuring the concentration of a gas passing through the line. U. S. Pat. No. 2,608,855 issued Sept. 2nd, 1952; assigned to United States of America (USAEC).

Injector mechanism for particle accelerator. Comprises, in part, an electron emissive filament, a shield about it which is electrically connected to it, an accelerating electrode maintained at a positive potential with respect to the shield and to the filament. U. S. Pat. No. 2,609,500 issued September 2nd, 1952; assigned to United States of America (USAEC).

Sincerely,

The Staff
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